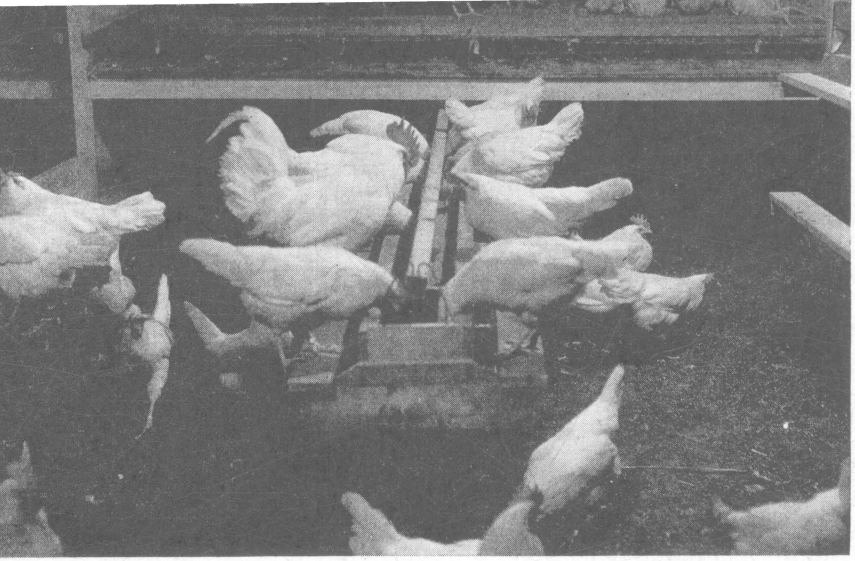

Extension
Bulletin 322

July, 1951

Ohio Poultry Rations

By

Ohio Poultry Feed Conference Board

Agricultural Extension Service
The Ohio State University

7-51/7M

The Ohio State University and the U. S. Department of Agriculture, Cooperating
Agricultural Extension Service, C. M. Ferguson, Director, Columbus, Ohio
Printed and distributed in furtherance of Acts of May 8 and June 30, 1914

How Much Do We Know About Feeding?

More research has been done on the nutritional requirements of chickens than on other farm animals, or even on humans. Chickens are relatively easy to work with in the laboratory and hence are widely used in nutritional research studies.

What Changes Have Taken Place in Recent Years?

Within the last few years scientists have made discoveries that have greatly changed our poultry rations and the results obtained from them. The use of antibiotics such as streptomycin and procane penicillin has greatly increased growth rates in young chickens and turkeys.

Another of the recent discoveries is Vitamin B_{12}. The availability of this vitamin has made it possible to replace much of the animal protein feedstuffs such as milk, meat, and fish by-products with the less expensive vegetable proteins such as soybean oil meal.

This fact, plus the availability of other vitamins, has changed the entire situation relative to the contents of the poultry rations. At present, it is less expensive to use large quantities of soybean oil meal and little, if any, meat, milk and fish by-products. Soybean oil meal is deficient in vitamins and minerals which must be added to the ration. These vitamins are all available at low cost, but it is impractical for the poultrymen to obtain them because many vitamin supplements are sold only in large quantities.

Comparative Costs of 20% Laying Mashes

Here are some present day costs of various types of 20 per cent protein laying mashes. These costs are for comparison purposes only.

	Approximate Cost per Ton
1948-49 O.S.U. 20 per cent laying mash containing large amounts of animal by-products	$103.00
20 per cent laying mash, page 5, this bulletin, contains small amounts of animal by-products	98.50
20 per cent laying mash mixed, using 38 per cent all-purpose supplement and home grown grains	98.00
Commercial high protein supplement mixed with home grown grains	98.00
20 per cent commercial laying mash	100.00

It can be noted that present day rations containing only small amount of animal by-products are less costly. Also, in general, mashes mixed using high protein supplements and home grown grains are the least costly.

What Are the Different Possibilities?

Mix Your Own Rations: Many formulas for good poultry rations are available. Present day rations are balanced so carefully, especially

as related to vitamins, that changes made by an uninformed person may upset the balance and produce an unsatisfactory ration.

After you have decided on a ration which you would like to consider, check with your feed dealer to determine exactly how much it would cost to mix this ration per ton or per hundred pounds. Then you will have this information available for comparison purposes.

Use a High Protein Mash Concentrate: This mixed with grains or grain by-products, is a popular and efficient practice for mixing poultry mashes. Many commercial feed companies offer mash concentrates for sale ranging in protein content from 30 to 40 percent. Each company which manufactures such a concentrate gives specific instructions as to grains and other products which must be added to the concentrate to make a complete poultry ration. **Follow these instructions to the letter.** No one knows except the manufacturer what should be added to that concentrate to make a complete ration. The tag on the bag will show the products included but will not give the quantities.

On page 5 you will find the formula for an all purpose 38 per cent supplement. This supplement can be used with home grown grains to make several different poultry mashes as shown below.

Using the 38% Protein Poultry Supplement

	Supplement	Grain
20% Chick Starter	**380 lbs.**	**620 lbs.**
22% Broiler	**450**	**550**
26% Poult Starter	**590**	**410**
20% Breeder Mash (feed with grain)	**380**	**620**
16% Breeder All Mash	**250**	**750**
26% Breeder Concentrate (feed with grain)	**590**	**410**

Grains for use with this 38 per cent protein supplement can be any combination of the common feedstuffs such as ground corn, ground wheat, ground oats, wheat bran, or wheat middlings. It is suggested that ground yellow corn be used to supply at least one-half the grain to be added to each ration.

Buy a Commercial Poultry Mash: There are many good commercial poultry mashes available. You might investigate the possibility of using these mashes. After you determine the cost of mixing your own rations and the cost of high protein mash concentrate with home grown grains, compare these costs with that of buying a complete commercial mash.

Always compare rations formulated for the same purpose. It should be recognized that, in general, the higher protein content the higher the cost. For example, if you compare the mash having a protein content of 20 per cent with another having a protein content of 22 per cent, you could expect the 22 per cent protein mash to cost more in most cases.

Ingredients	Chick Starting mash, 20% Protein
Corn, yellow	400 lbs.
Middling, standard	150
Bran	100
Soybean oil meal	225
Meat scrap	50
Alfalfa, 17% protein dehyd.	50
Rock phosphate, defl. or bone meal	10
Limestone	10
Mineral mixture	5
Total	1,000 lbs.

I All Purpose Vitamin Mixture (1) ..... 5 lbs.

II Vitamins to be added per 1000 lb. of mash if All Purpose Vitamin Mixture is not used

Vitamin A, I.U.	0
Vitamin D_3, I.U.	135,000
Riboflavin, mg	107
Calcium pantothenate, mg	0
Choline Chloride, gm	131
Vitamin B_{12}, mg	0
Antibiotic, grams	2.0

(1) All Purpose Vitamin Mixture contains the following vitamins and antibiotic per 100 lbs. of mixture. The balance to be made up of soybean oil meal or middlings.

Vitamin A, I.U.	13,686,500
Vitamin D_3, I.U.	5,312,500
Riboflavin, gms	5.64
Calcium pantothenate, gms	12.12
Choline Chloride, gms	4,205
Vitamin B_{12}, mg	27.00
Antibiotic, gms	40.00

) RATIONS

ng 20% n	Laying and Breeding mash, 20% Protein	Broiler mash, 22% Protein	Poult Starting mash, 26% Protein	Breeding mash conc., 26% Protein	38% Protein Supplement
00 lbs....	390 lbs..	500 lbs....	325 lbs.....	300 lbs...	.....
50.....	150.....	100.....	100.....	100.....	.....
00.....	100.....	0.....	0.....	0.....	.....
25.....	225.....	280.....	370.....	370.....	800 lbs.
50.....	50.....	80.....	100.....	100.....	100
50.....	50.....	25.....	75.....	75.....	.....
10.....	25.....	0.....	15.....	40.....	50
10.....	0.....	10.....	10.....	0.....	25
5.....	10.....	5.....	5.....	15.....	25
00 lbs.	1,000 lbs.	1,000 lbs.	1,000 lbs.	1,000 lbs.	1,000 lbs.
5 lbs.	14 lbs.	5 lbs.	14 lbs.	20 lbs.	50 lbs.
0 1,519,053	....	0	0	2,737,293	6,786,000
00 666,667	135,000	.....	600,000	1,062,500	1,360,000
07 600	....	219	74	1,128	 1,488
0 0	....	606	0	763	 7,088
31 525	....	93	166	841	 1,140
0 ..... 3.9....		0	0	5.4....	8
2.0..... 4.0....		2.0.....	4.0.....	6.3....	8

nd oil

Mineral Mixture: (Either one of the following may be used)

	No. 1	No. 2
Salt (NaCl)	96.975	96.345
Potassium Iodide (KI)[2]	0.025	0.025
Manganese Sulfate ($MnSO_4$) (feeding grade)	3.000	3.000
Cobalt Sulfate ($CoSO_4$)		0.020
Iron Sulfate ($FeSO_4$)		0.600
Copper Sulfate ($CuSO_4$)		0.010
Total	100.00 lbs.	100.00 lbs.

[2] If iodized salt is used, the KI may be omitted.

Up-To-Date Poultry Rations

Poultrymen should contact feed dealers and urge them to stock vitamins for use in poultry mashes. With these vitamin products, highly satisfactory poultry rations can be mixed at a reasonable cost.

Up-to-date poultry rations are difficult to formulate because vitamin supplements must be added if they are to be economical. On the preceding pages are given Ohio recommendations for mixing poultry rations. These recommendations are based on the latest information available. Natural feedstuffs such as corn, soybean oil meal, wheat bran, and so forth, are readily obtainable. When you begin to add vitamin supplements, it will be a different story.

These vitamins are available at a relatively low cost per unit and the Extension Service can give you information as to where they can be obtained. But, at present, most of these vitamin supplements are sold in relatively large quantities, considering the amount of feed which the average poultryman will use. Because of this condition, it is doubtful if the small poultry producer can consider mixing these rations.

Whole Oats Mash Ration 17% Protein

A balanced "all-in-one" ration for growth of chickens (after first 8 to 10 weeks) indoors and for layers indoors has been used successfully at the Ohio Agricultural Experiment Station. When you feed this ration, feed no additional whole grain. This balanced "all-in-one" ration will aid in preventing feather picking and cannibalism. It also will prevent low egg production and other troubles caused by the consumption of too much whole grain and too little mash.

Ingredients	Pounds No.1	No.2 All-plant[4]
Whole oats	200	200
Corn, coarsely ground	300	300
Wheat middlings	150	150
Wheat bran	100	100
Soybean oil meal	110	180
Meat scraps 50% protein	50	...
Dried milk or whey	25	...
Alfalfa meal dehyd. 17% protein	50	50
Bone meal, steamed or defl. rock phosphate	10	15
Salt-manganese mixture[1]	5	5
Feeding oil (750A 400D)[2]	2.5	2.5
Dried fermentation solubles[3] (225 milligrams riboflavin per pound)	...	5

[1] Composed of iodized salt, 9 pounds, and technical manganese sulfate, 1 pound.

[2] Or a comparable unitage of Vitamins A and D from other sources.

[3] Or a comparable unitage of riboflavin from other sources.

[4] If **not** on old built-up litter, add a Vitamin B_{12} supplement in sufficient quantity to supply 2 milligrams of Vitamin B_{12} per 1000 pounds.

Keep oyster shell or high calcium limestone grit and granite or silica grit before layers at all times. Granite or silica grit is desirable during growth period, but oyster shell or limestone grit is not needed until shortly before pullets start to lay.

Pasture Rations

Rations here are for growing chickens (after the first 8 to 10 weeks) and for layers on range that provides plenty of green feed. Either of the 14 per cent protein rations is satisfactory for run-of-farm pasture that is average to poor quality. Corn-mineral rations are especially desirable for economy of feeding chickens on good ladino clover pasture.

	Pounds			
	14% Protein		Corn-minerals	
Ingredients	No.1	No.2 All-plant	No.1	No. 2 All-mash
Whole corn[1]	...	...	F:C[5]	...
Corn[1] **coarsely ground**	690	655	900	950
Defluorinated rock phosphate[2]	...	15	60	30
Limestone or oyster shell	10	10	20	10
Salt-manganese mix[3]	10	10	20	10
Whole oats[4]	100	100		
Wheat bran[4]	50	50		
Soybean oil meal	90	160		
Meat Scraps 50% protein	50	...		

[1] All or part of the corn may be replaced by wheat.
[2] Bone meal steamed may replace rock phosphate.
[3] Composed of 9 pounds iodized salt and 1 pound technical grade manganese sulphate.
[4] All or part may be replaced with an equal amount of coarsely ground corn or wheat.
[5] Free choice.

Keep silica or granate grit available at all times for growing chickens and layers. Keep oyster shell or high calcium limestone grit available after pullets are 16 weeks of age.

Feeding Suggestions

Here are some general recommendations for feeding, listed for your convenience:

Water—Be sure to keep an ample supply of clean water before the flock at all times.

Insoluble Grit—When whole grain is fed to poultry you may want to keep insoluble grit before the flock.

Calcium—Keep calcium, in the form of high calcium limestone grit, or oyster shell before the layers at all times. Pullets that are about 16 weeks of age need either one of these.

How to Feed the 20% Chick Mash

All Mash Chick Starter—The 20 per cent starter is recommended for chicks to be raised for laying flock replacement. Keep this feed before chicks after you put them in the brooder house.

Growing Mash for Pullets—At 4 to 6 weeks, limited whole grain can be fed in addition to the mash. Feed mash and grain free choice from 8 weeks to maturity or change to one of the range rations on page 6 if pullets have access to pasture.

Growing Mash for Turkeys—After 8 weeks, it can be fed as a growing mash to turkeys on pasture with grains free choice. Feed insoluble grit to growing turkeys when they receive whole grain, but it is not necessary to keep the insoluble grit before the flock at all times.

How to Feed 20% Laying, Breeding Mash

This mash is adequate in the vitamins essential to good hatchability, so it can be fed to breeding flocks as well as market egg flocks.

Keep the mash before the layers at all times. Feed whole grains (corn, wheat or oats) at the rate of 40 pounds of grain to each 60 pounds of mash consumed. Another system is keep the mash before the birds all the time and limit the grain to from 2 to 6 quarts per 100 birds per day. Feed the smaller amount of grain when egg production is low.

How to Feed the 22% Broiler Mash

All Mash Broiler Feed—Keep the 22 per cent broiler mash before the broilers at all times from the time they are placed in the brooder house until 8 weeks of age. Then change to the 20 per cent chick starting mash or start feeding grain at a rate not to exceed 30 to 50 per cent of the total feed intake (mash and grain) until market age.

How to Feed the 26% Poult Starter

All Mash Turkey Starter—Feed only the turkey starter to poults from the time the poults are placed in the brooder house until 8 weeks of age. After 8 weeks, it can be used as a growing mash by feeding grain and mash free choice. If desired, the Vitamin B_{12} and Antibiotic may be eliminated after 8 to 10 weeks of age.

How to Feed 26% Breeding Mash Concentrate

Feed free choice as a laying and breeding mash for chickens and turkeys. Grains such as corn, wheat and oats also can be fed free choice.